

What is claimed is:

1. An optical fiber coating comprising:  
a radiation curable composition which comprises a reactive monomer and  
a photoinitiator; said composition selected such that  
a Chang viscoelastic window of said composition when cured exhibits at least one set  
of coordinates, the coordinates are in terms of the log of viscous shear modulus ( $G''$ )  
and the elastic shear modulus ( $G'$ ) in the units of Pascals, which lies within at least  
one of the following windows defined by the following sets of window coordinates:  
(1) (about 3.000, about 4.480), (about 3.000, about 3.000), (6.000, about 4.480), and  
(about 6.000, about 3.000); (2) (greater than about 3.840, about 5.180), (greater than  
about 3.840, about 4.480), (about 6.000, about 5.180), and (about 6.000, about 4.480);  
(3) (about 5.112, about 6.000), ( about 5.112, about 5.180), (about 6.000, about  
6.000), and (about 6.000, about 5.180); (4) (about 4.530, about 5.604), (about 4.530,  
about 5.180), (about 5.112, about 5.604), and (about 5.112, about 5.180); and (5)  
(about 4.530, about 6.000), (about 4.530, about 5.729), (about 5.112, about 6.000),  
and (about 5.112, 5.729).
2. The coating according to claim 1 wherein at least a second set of coordinates lies  
within one of said sets of window coordinates.
3. The coating according to claim 1 wherein said at least one set coordinates of said  
composition lies within one of the following second sets of window coordinates: (3)  
(about 5.112, about 6.000), ( about 5.112, about 5.180), (about 6.000, about 6.000),  
and (about 6.000, about 5.180); (4) (about 4.530, about 5.604), (about 4.530, about  
5.180), (about 5.112, about 5.604), and (about 5.112, about 5.180); (5) (about 4.530,  
about 6.000), (about 4.530, about 5.729), (about 5.112, about 6.000), and (about  
5.112, about 5.729); (6) (about 5.440, about 5.180), (about 5.440, about 4.480), (about  
6.000, about 5.180), and (about 6.000, about 4.480); (7) greater than about 3.840,  
about 5.180), (greater than about 3.840, about 3.850), (about 5.440, about 5.180), and  
(about 5.440, about 3.850); (8) (about 5.440, about 4.480), (about 5.440, about 3.000),

about 6.000, about 4.480), and (about 6.000, about 3.000); (9) (about 4.530, about 3.850), (about 4.530, about 3.000), (about 5.440, about 3.850), and (about 5.440, about 3.000); (10) (about 4.106, about 5.474), (about 4.106, about 5.350), (about 4.930, about 5.474), and (about 4.930, about 5.350); (11) (about 4.232, about 5.375), (about 4.232, about 5.235), (about 4.958, about 5.375), and (about 4.958, about 5.235); and (12) (about 4.139, about 5.488), (about 4.139, about 5.409), (about 4.894, about 5.488), and (about 4.894, about 5.409).

4. The coating according to claim 2 wherein said second set of coordinates lies within at least one of the following third sets of window coordinates comprising (3) (about 5.112, about 6.000), (about 5.112, about 5.180), (about 6.000, about 6.000), and (about 6.000, about 5.180); (4) (about 4.530, about 5.604), (about 4.530, about 5.180), (about 5.112, about 5.604), and (about 5.112, about 5.180); (5) (about 4.530, about 6.000), (about 4.530, about 5.729), (about 5.112, about 6.000), and (about 5.112, about 5.729); (6) (about 5.440, about 5.180), (about 5.440, about 4.480), (about 6.000, about 5.180), and (about 6.000, about 4.480); and (7) (greater than about 3.840, about 5.180), (greater than about 3.840, about 3.850), (about 5.440, about 5.180), and (about 5.440, about 3.850).
5. The coating according to claim 4 wherein said third sets of window coordinates comprises (3) (about 5.112, about 6.000), (about 5.112, about 5.180), (about 6.000, about 6.000), and (about 6.000, about 5.180); (4) (about 4.530, about 5.604), (about 4.530, about 5.180), (about 5.112, about 5.604), and (about 5.112, about 5.180); (5) (about 4.530, about 6.000), (about 4.530, about 5.729), (about 5.112, about 6.000), and (about 5.112, about 5.729); and (6) (about 5.440, about 5.180), (about 5.440, about 4.480), (about 6.000, about 5.180), and (about 6.000, about 4.480).
6. The coating according to claim 1 wherein the composition when cured has a Young's modulus of less than about 1.2 MPa.

7. The coating according to claim 6 wherein the Young's modulus comprises less than about 0.9MPa.
8. The coating according to claim 1 wherein the composition further comprises a thermoplastic elastomer.
9. The coating according to claim 1 wherein the composition comprises substantially devoid of a tackifier.
- ~~10. The coating according to claim 1 wherein said composition comprises a tackifier.~~
11. The coating according to claim 1 wherein the composition comprises at least one compound selected from a rosin ester, an aliphatic hydrocarbon resin, an aromatic hydrocarbon resin, and combinations thereof.
12. The coating according to claim 1 wherein the composition comprises at least one compound selected from a styrene-diene block copolymer, homopolymers, and combinations thereof.
13. The coating according to claim 12 wherein the composition further comprises a softblock, said softblock comprises at least one selected from butadiene, isoprene, polyisoprene, and combinations thereof.
14. The coating according to claim 1 wherein the Young's modulus comprises less than about 0.65 MPa and a percent elongation comprises more than about 140%.
15. The coating according to claim 14 wherein the Young's modulus comprises about 0.5 MPa or less
16. The coating according to claim 14 wherein the percent elongation comprises at least 150%.

17. The coating according to claim 1 wherein a percent elongation of the cured composition comprises more than about 131%.
18. An optical fiber coating comprising:  
a radiation curable composition which comprises a reactive monomer and a photoinitiator; said composition selected such that  
at least one of the set of coordinates of a Chang viscoelastic window of said composition when cured does not lie within anyone of the windows defined by the following sets of window coordinates, the coordinates are in terms of the log of viscous shear modulus ( $G''$ ) and the elastic shear modulus ( $G'$ ) in the units of Pascals,:  
(A) (about 3.000, about 5.180), (about 3.000, about 4.480), (less than about 3.850, about 5.180), and (less than about 3.85, about 4.480); (B) (about 3.000, about 6.000), (about 3.000, about 5.180), (about 4.530, about 6.000), and (about 4.530, about 5.180); and (C) (about 4.530, about 5.729), (about 4.530, about 5.604), (about 5.112, about 5.729), and (about 5.112, about 5.604).
19. The coating according to claim 18 wherein the composition when cured has a Young's modulus of less than about 1.2 MPa.
20. The composition according to claim 19 wherein the Young's modulus comprises less than about 0.9MPa.
21. The composition according to claim 18 wherein the composition further comprises a thermoplastic elastomer.
22. The composition according to claim 18 wherein the composition comprises substantially devoid of a tackifier.
23. The composition according to claim 18 wherein said composition comprises a tackifier.

24. The composition according to claim 23 wherein said tackifier comprises at least one compound selected from a rosin ester, an aliphatic hydrocarbon resin, an aromatic hydrocarbon resin, and combinations thereof.
25. The composition according to claim 21 wherein said elastomer comprises at least one compound selected from a styrene-diene block copolymer, homopolymer, and combinations thereof.
26. The composition according to claim 25 wherein the said elastomer comprises a diene which comprises at least one selected from butadiene, isoprene, and combinations thereof.
27. The composition according to claim 18 wherein the Young's modulus comprises less than about 0.65 MPa and a percent elongation comprises more than about 140%.
28. The composition according to claim 27 wherein the Young's modulus comprises about 0.5 MPa or less
29. The composition according to claim 27 wherein the percent elongation comprises at least 150%.
30. The composition according to claim 18 wherein a percent elongation of the composition comprises more than about 131%.
31. A coated optical fiber comprising:
  - a core;
  - a cladding encompassing said cladding; and
  - a coating encompassing said core wherein said coating comprises a radiation curable composition which comprises a reactive monomer and a photoinitiator; said composition selected such that
  - a Chang viscoelastic window, on a log scale, of said composition when cured exhibits at least one set of coordinates within at least one of the following windows defined by the following at least following sets of window coordinates, the coordinates are in terms of

the log of viscous shear modulus ( $G''$ ) and the elastic shear modulus ( $G'$ ) in the units of Pascals,: (1) (about 3.000, about 4.480), (about 3.000, about 3.000), (6.000, about 4.480), and (about 6.000, about 3.000); (2) (greater than about 3.840, about 5.180), (greater than about 3.84, about 4.480), (about 6.000, about 5.180), and (about 6.000, about 4.480); (3) (about 5.112, about 6.000), (about 5.112, about 5.180), (about 6.000, about 6.000), and (about 6.000, about 5.180); (4) (about 4.530, about 5.604), (about 4.530, about 5.180), (about 5.112, about 5.604), and (about 5.112, about 5.180); and (5) (about 4.530, about 6.000), (about 4.530, about 5.729), (about 5.112, about 6.000), and (about 5.112, about 5.729).

32. The fiber according to claim 31 wherein at a second set of coordinates lies within one of said window sets of coordinates.

33. The fiber according to claim 31 wherein said at least one set of coordinates of said composition lies within at least one of the following second sets of window coordinates: (3) (about 5.112, about 6.000), (about 5.112, about 5.180), (about 6.000, about 6.000), and (about 6.000, about 5.180); (4) (about 4.530, about 5.604), (about 4.530, about 5.180), (about 5.112, about 5.604), and (about 5.112, about 5.180); (5) (about 4.530, about 6.000), (about 4.530, about 5.729), (about 5.112, about 6.000), and (about 5.112, 5.729); (6) (about 5.440, about 5.180), (about 5.440, about 4.480), (about 6.000, about 5.180), and (about 6.000, about 4.480); (7) (greater than about 3.840, about 5.180), (greater than about 3.840, about 3.850), (about 5.440, about 5.180), and (about 5.440, about 3.850); (8) (about 5.440, about 4.480), (about 5.440, about 3.000), (about 6.000, about 4.480), and (about 6.000, about 3.000); (9) (about 4.530, about 3.850), (about 4.530, about 3.000), (about 5.440, about 3.850), and (about 5.440, about 3.000); (10) (about 4.106, about 5.474), (about 4.106, about 5.350), (about 4.930, about 5.474), and (about 4.930, about 5.350); (11) (about 4.232, about 5.375), (about 4.232, about 5.235), (about 4.958, about 5.375), and (about 4.958, about 5.235); and (12) (about 4.139, about 5.488), (about 4.139, about 5.409), (about 4.894, about 5.488), and (about 4.894, about 5.409).

34. The fiber according to claim 33 wherein said second sets of window coordinates comprises (3) (about 5.112, about 6.000), ( about 5.112, about 5.180), (about 6.000, about 6.000), and (about 6.000, about 5.180); (4) (about 4.530, about 5.604), (about 4.530, about 5.180), (about 5.112, about 5.604), and (about 5.112, about 5.180); (5) (about 4.530, about 6.000), (about 4.530, about 5.729), (about 5.112, about 6.000), and (about 5.112, about 5.729); (6) (about 5.440, about 5.180), (about 5.440, about 4.480), (about 6.000, about 5.180), and (about 6.000, about 4.480); and (7) (greater than about 3.840, about 5.180), (greater than about 3.840, about 3.850), (about 5.440, about 5.180), and (about 5.440, about 3.850).
35. The fiber according to claim 33 wherein said second sets of window coordinates comprises (3) (about 5.112, about 6.000), ( about 5.112, about 5.180), (about 6.000, about 6.000), and (about 6.000, about 5.180); (4) (about 4.530, about 5.604), (about 4.530, about 5.180), (about 5.112, about 5.604), and (about 5.112, about 5.180); (5) (about 4.530, about 6.000), (about 4.530, about 5.729), (about 5.112, about 6.000), and (about 5.112, about 5.729); and (6) (about 5.440, about 5.180), (about 5.440, about 4.480), (about 6.000, about 5.180), and (about 6.000, about 4.480).
36. The fiber according to claim 31 wherein an effective area of said fiber comprises more than about  $70 \mu\text{m}^2$  at about 1550 nm.
37. The fiber according to claim 36 wherein said effective area comprises about  $80 \mu\text{m}^2$  or more at about 1550 nm.
38. The coating according to claim 1 wherein said sets of window coordinates comprises (greater than about 3.840, about 5.180), (greater than about 3.840, about 3.850), (about 5.440, about 5.180), and (about 5.440, about 3.850).
39. The coating according to claim 18 wherein the composition has at least one set of coordinates which lies within a set of window coordinates comprising (greater than about

3.840, about 5.180), (greater than about 3.840, about 3.850), (about 5.440, about 5.180), and (about 5.440, about 3.850).

40. The coating according to claim 8 wherein said elastomer comprises a thermoplastic polyurethane.
41. The coating according to claim 1 wherein said composition further comprises a carrier.
42. The coating according to claim 18 wherein said composition further comprises a carrier.
43. The coating according to claim 18 wherein said composition further comprises a homopolymer.
44. The coating according to claim 1 wherein said composition comprises a homopolymer.
45. The coating according to claim 21 wherein said elastomer comprises a thermoplastic polyurethane.
46. The coating according to claim 18 wherein at least a second set of coordinates of coordinates exhibited by the composition does not lie within said window sets of coordinates.
47. The coating according to claim 18 wherein at least two additional sets of coordinates exhibited by the composition do not lie within said window sets of coordinates.